On-Demand Telemetry

Completed Technology Project (2017 - 2018)

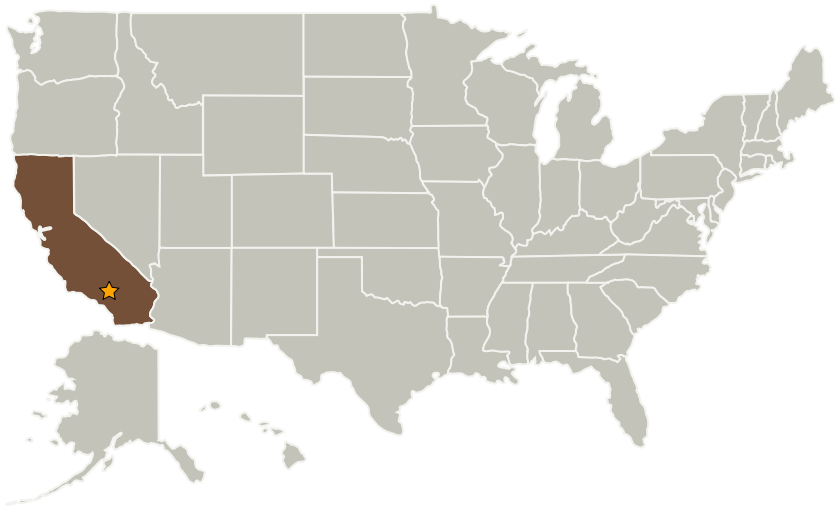
Project Introduction

AFRC has previously investigated the use of Network Based Telemetry. We will be building on that research to enable On-Demand Telemetry. On-Demand Telemetry is a way to only telemeter data that is requested when it is requested by bringing current networking technologies to the flight test world. Through this approach we can plan what data to telemeter at different points throughout a mission and reduce the overall spectrum required. This approach enables the changing of parameter rates on researcher need live through a flight test mission. We will evaluate different approaches of the Publish Subscribe messaging paradigm to what fits the requirements of our range assets, aircraft embedded systems, and operational considerations. We will build up to a lab test. At the end of FY18 we will produce a report with our findings in integrating a lab test and requirements that could lead to a flight system for future testing.

Anticipated Benefits

On-Demand Telemetry's goal is to move from fixed-format telemetry to a more dynamic approach. This allows researchers to get the data they need in real-time during a mission and allows an overall reduction in spectrum required due to the dynamic nature of parameter subscription.

Primary U.S. Work Locations and Key Partners



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Center Innovation Fund: AFRC CIF

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Organizations Performing Work	Role	Type	Location
★Armstrong Flight Research Center(AFRC)	Lead Organization	NASA Center	Edwards, California

Primary U.S. Work Locations
California

Project Transitions

October 2017: Project Start

September 2018: Closed out

Closeout Summary: Flight Testing requires telemetering data to safely and effi ciently achieve mission success. Telemetering data utilizes RF spectrum which is a limited and constrained resource. As projects and programs advance they requ ire larger datasets to be telemetered, which means more spectrum is being utiliz ed by NASA, DoD, and Commercial users. The other challenge faced is that tradi tional flight telemetry is in a fixed format, and therefore cannot be changed duri ng a live mission.

Project Website:

https://www.nasa.gov/directorates/spacetech/innovation_fund/index.html#.VC

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Armstrong Flight Research Center (AFRC)

Responsible Program:

Center Innovation Fund: AFRC CIF

Project Management

Program Director:

Michael R Lapointe

Program Manager:

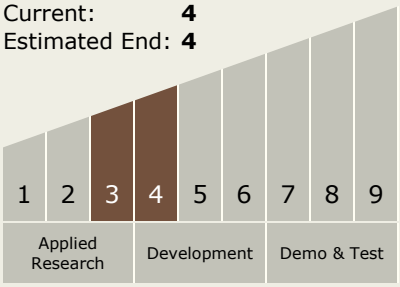
David F Voracek

Principal Investigator:

Otto C Schnarr

Technology Maturity (TRL)

Start: **3**
Current: **4**
Estimated End: **4**



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Technology Areas

Primary:

- TX05 Communications, Navigation, and Orbital Debris Tracking and Characterization Systems
  - TX05.2 Radio Frequency
    - TX05.2.1 Spectrum-Efficiency

Target Destination

Earth